

CLAIMS

Claim 1(currently amended): An attachment system for an automotive vehicle ~~article of manufacture~~, comprising:

a first member having a first flange providing a first attachment surface;

a second member having a second flange providing a second attachment surface, the second surface opposing the first surface forming a gap therebetween, at least one of the first member and second member being a roof panel of the automotive vehicle; and

a structural adhesive material adhered to the first surface and the second surface, the structural adhesive material formed from a heat activatable material, the structural adhesive material having a tensile strength of at least 12 MPa.

Claim 2 (canceled)

Claim 3 (currently amended): The An attachment system as in claim 1 wherein a layer of primer and a layer of paint are disposed directly over the adhesive material concealing the adhesive material from a surrounding environment and providing a Class A or a Class B finish.

Claims 4 and 5 (canceled)

Claim 6 (currently amended): The An attachment system as in claim 3 wherein the structural adhesive material provides substantially the only attachment between the first surface and the second surface.

Claim 7 (canceled)

Claim 8 (currently amended): The An attachment system as in claim 3 wherein the structural adhesive material is applied to at least one of the first surface and the second surface with a mini-applicator.

Claim 9 (currently amended): The An attachment system as in claim 8 wherein the mini-applicator includes an extruder.

Claims 10-12 (canceled)

Claim 13 (currently amended): The An attachment system as in claim 3 wherein the adhesive material is formed from a heat activatable material that expands at a temperature encountered during at least one of an automotive e-coat and an automotive painting operation.

Claims 14-22 (canceled)

Claim 23 (currently amended): The An attachment system as in claim 1 22 wherein the first member or the second member is a side panel of an automotive vehicle.

Claim 24 (currently amended): The An attachment system as in claim 1 wherein the first member or the second member is a side panel of an automotive vehicle.

Claim 25 (currently amended): The An attachment system as in claim 1 wherein the first member is attached to the second member with less than 10 welds.

Claim 26 (currently amended): The An attachment system as in claim 1 wherein the first member is attached to the second member with less than 5 welds.

Claim 27 (previously presented): An attachment system for an automotive vehicle, comprising:

a roof panel of the automotive vehicle, the roof panel having a flange extending at an angle from the roof panel, the flange providing an attachment surface;

a side body panel of the automotive vehicle, the side body panel having a flange extending at an angle from the side body panel, the flange of the side panel also providing an attachment surface; and

a structural adhesive material adhered to the attachment surface of the roof panel and the attachment surface of the side panel;

wherein the roof panel is attached to the side body panel with less than 20 welds; and

wherein a layer of primer, a layer of paint or both are disposed directly over the adhesive material.

Claim 28 (currently amended): The An attachment system as in claim 27 wherein the roof panel is attached to the side panel with less than 10 welds.

Claim 29 (currently amended): The An attachment system as in claim 27 wherein the roof panel is attached to the side panel with less than 5 welds.

Claim 30 (currently amended): The An attachment system as in claim 27 wherein the structural adhesive material has a tensile strength of at least 12 MPa.

Claim 31 (currently amended): The An attachment system as in claim 27 wherein the layer of primer, the layer of paint or both conceal the adhesive material from a surrounding environment and provide a Class A or a Class B finish.

Claim 32 (currently amended): The An attachment system as in claim 27 wherein the structural adhesive material provides substantially the only attachment between the attachment surface of the flange of the roof panel and the attachment surface of the flange of the side panel.

Claim 33 (currently amended): The An attachment system as in claim 27 wherein the structural adhesive material provides attachment between the roof panel and the body panel without the assistance of any welds.

Claim 34 (currently amended): The An attachment system as in claim 27 wherein the adhesive material extends substantially continuously along the attachment surface of the roof panel.

Claim 35 (currently amended): The An attachment system as in claim 27 wherein the adhesive material is formed from a heat activatable material that expands at a temperature encountered during at least one of an automotive e-coat and an automotive painting operation.

Claim 36 (currently amended): The An attachment system as in claim 27 wherein the flange of the roof panel extends downwardly at an angle relative to the roof panel.

Claim 37 (currently amended): The An attachment system as in claim 27 wherein the flange of the side body panel extends downwardly at an angle from the side body panel.

Claim 38 (previously presented): An attachment system for an automotive vehicle, comprising:

- a roof panel of the automotive vehicle, the roof panel having a first flange extending at an angle from the roof panel, the first flange of the roof panel providing an attachment surface, the first flange of the roof panel extending downwardly at an angle relative to the roof panel;

- a side body panel of the automotive vehicle, the side body panel having a first flange extending at an angle from the side body panel, the first flange of the side panel also providing an attachment surface, the first flange of the side panel extending downwardly, the body panel having a second flange extending from the first flange of the side panel; and

- a structural adhesive material adhered to the attachment surface of the roof panel and the attachment surface of the side panel, the structural adhesive material being an epoxy-based structural foam, the structural adhesive material having a tensile strength of at least 12 MPa;

wherein the roof panel is attached to the side body panel with less than 10 welds;

wherein a layer of primer, a layer of paint or both are disposed directly over the adhesive material concealing the adhesive material from a surrounding environment and providing a Class A or a Class B finish;

wherein the adhesive material extends substantially continuously along the attachment surface of the first flange of the roof panel; and
wherein the adhesive material is formed from a heat activatable material that expands at a temperature encountered during at least one of an automotive e-coat and an automotive painting operation.

Claim 39 (new): The attachment system as in claim 1 wherein the gap is exposed to an environment surround the automotive vehicle.

Claim 40 (new): The attachment system as in claim 1 wherein the roof panel is an outer roof body panel.

Claim 41 (new): The attachment system as in claim 27 wherein the roof panel is an outer roof body panel.